REMARKS

The Office Action dated February 03, 2002 has been carefully considered and this Reply prepared in response. Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks.

After amending the claims as set forth above, claims 1-10, 12, and 14-27 are now pending in this application; of these, claims 1-9, 16, 19-22 and 26 are non-elected.

An Associate Power of Attorney is enclosed.

Interview of June 30, 2003

Examiner Palabrica is thanked for extending the courtesy of an interview to Applicants' representatives on June 30, 2003, where it was agreed that if the claims were amended to recite that the photocatalytic substance was formed as particles prior to introduction into the feedwater of a reactor, the claims appear to distinguish over the cited references.

During the interview, the meaning of "particle(s)" was also discussed, and Applicants' representative believes that a tentative agreement was reached that the claims are allowable under 35 U.S.C. § 112, first and second paragraph.

As discussed in the interview, an Associate Power of Attorney is attached at the end of this paper.

Objection to the Specification and Rejection of Claims Under 35 U.S.C. § 112, First Paragraph

The specification is objected to as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention in view of claims 10, 12, 14, 15, 17, 18 and 23-25, which stand rejected under 35 U.S.C. § 112, first paragraph for the same reasons.

The Office Action takes issue with the use of the term "particle" and "particles." In response, Applicants rely on the definition of "particle" provided by the American Heritage Dictionary of the English Language, which is "a relatively small . . . amount of something." Applicants believe that this definition comports with the use of the term in the specification. For example, on page 4, lines 17-19, the specification states that "[p]referably, the corrosion potential reducing substance is formed as a particle having a surface provided with at least one of Pt, Rh, Ru and Pd." If the term "particle" is replaced with the above definition, the just quoted portion of the specification reads: preferably, the corrosion potential reducing substance is formed as a *relatively small amount* having a surface provided with at least one of Pt, Rh, Ru and Pd. Thus, it is respectfully submitted that there is adequate description and an enabling disclosure as to what "particle" means.

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The disclosure was also objected to based on the meaning of the clause "having a surface on which at least one of Pt, Rh, Ru, and Pd is provided." Specifically, the Office Action asserts that it is not understood as to whether one atom of Pt, Rh, Ru, and Pd is provided on the surface of the particle, or whether the entire surface of the particle is coated by one of these elements. Applicants respectfully submit that as the claims are open ended, the recitation that "at least one of Pt, Rh, Ru and Pd is provided" on the surface of the particle means that these elements are provided on its surface in sufficient quantities to suppress corrosion of a reactor structural member. This amount can be obtained through routine experimentation, which is permissible and thus enabling. (See MPEP § 2164.01(a).)

* * * * *

Finally, the specification is objected to as being insufficient as to how and in what manner one assures or positively knows that each particle has one of the elements on its surface. Applicants respectfully submit that one of ordinary skill in the art would readily understand how to determine whether this particular recitation of the claims has been satisfied. Under 35 U.S.C. § 112, first paragraph, the specification must "contain a written description of the invention . . . as to enable any person skilled in the art to which it pertains,

or with which it is most nearly connected, to make and use the [invention]." In determining whether claims are enabled by the specification, several factors should be considered, including the nature of the invention, the state of the prior art, the level of predictability in the art, and the quantity of experimentation needed to make or use the invention based on the content of the invention. MPEP § 2164.01(a). A patent specification need not teach, and preferably should omit those elements or steps that are well known to those skilled in the art. MPEP § 2164.01 (citing, *inter alia, In re Buchner* 929 F.2d 660, 661 (Fed. Cir. 1991)). It is respectfully submitted that the objected to step is well known to those skilled in the art. Reconsideration of the objections and rejections under 35 U.S.C. §112, first paragraph is respectfully requested.

Rejections Under 35 U.S.C. §112, Second Paragraph

In the Office Action, claims 10, 14, 15, 17, 18 and 23-25 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Office Action takes issue with the term "particle," and the recitations regarding the surface of the particle, as discussed above under §112, first paragraph. In the interest of economy, Applicants refer to their statements regarding the patentability of the claims in view of the first paragraph of §112, and respectfully submit that the claims are allowable for the reasons articulated above.

Rejections Under 35 U.S.C. § 102

Claims 10 (the independent claim from which each of the elected claims depend) 14, 15, 17, 18, and 25 stand rejected under 35 U.S.C. §102(b) as being anticipated by Hettiarachchi-I (USP 5,818,893) and Hettiarachchi-II (USP 5,904,991). In response, Applicants have made the above amendment to claim 10, and respectfully submit that claim 10 and its dependent claims are allowable.

Applicants rely on MPEP § 2131, entitled "Anticipation – Application of 35 U.S.C. 102(a), (b), and (e)," which states that a "claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." It is respectfully submitted that neither of the Hettiarachchi references describe each and every element of amended claim 10.

Claim 10 now recites that the method of suppressing corrosion of a reactor structural member includes forming photocatalytic substances formed as particles made of TiO_2 *prior* to introducing the particles into the feedwater of the reactor. That is, TiO_2, a corrosion potential reducing substance, is formed separate from the feedwater of the reactor, and then introduced into the feedwater.[1]

In contrast, neither of the Hettiarachchi references disclose, teach, or suggest introducing TiO_2 into the feedwater of the reactor. The references do teach introducing Ti into the feedwater, but Ti alone is not a photocatalytic substance, thus a photocatalytic substance is not formed *prior to* introduction into the feedwater. Thus, claim 10 and its dependent claims are allowable for at least this reason.

* * * * *

Claim 10 also recites that "each particle [has] a surface on which at least one of Pt, Rh, Ru and Pd is provided." Neither of the Hettiarachchi references disclose, teach, or suggest such a feature. True, Hettiarachchi does state that *mixtures* of platinum group compounds and non platinum group compounds may be used. However, mixtures do not denote providing Pt on a surface of each particle, as mixtures are known to one of ordinary skill in the chemical arts to be mere concoctions of various elements and compounds having no chemical bonds between them (and if any are present, they exist in trace amounts). This is not surprising, as the Hettiarachchi references are directed towards forming the desired compounds *inside* the reactor, as opposed to forming the photocatalytic substances prior to introduction of the substances into the feedwater of the reactor. Thus, claim 10 and the claims dependent from claim 10 are allowable for yet another reason.

Claim Rejections Under 35 U.S.C. §103(a)

[1] Support for the amendment is found at page 5, line 31, to page 6, line 7: "A method of securely attaching the corrosion potential reducing substance . . . supplies the corrosion potential reducing substance *into* the cooling water . . . ." (Emphasis added.) Thus, the specification teaches that in some embodiments of the invention, the corrosion potential reducing substance is formed prior to being introduced into the cooling water. That same section provides examples of "corrosion potential reducing substances" at lines 33-34 of page 5: "the photocatalytic substance combined with a noble metal . . . ." As the specification teaches that TiO_2 is a photocatalytic substance (see page 5, lines 7-8), the amendments to claim 10 are supported in the specification.

In the Office Action, claims 10 (the independent claim from which each of the elected claims depend) 14, 15, 17, 18, and 25 stand 35 U.S.C. §103(a) as being unpatentable over Andersen (USP 5,608,766) in view of either of the Hettiarachchi references, and claims 12, 23 and 24 stand rejected as being unpatentable over either of the Hettiarachchi references when combined with Uetake (USP 5,377,245) or Panson (USP 4,842,812). Still further, claims 12, 23, and 24 stand rejected as being unpatentable over a Andersen-Hettiarachchi combination when combined with Uetake or Panson.

As noted above, Applicants have amended claim 10, and respectfully submit that claim 10 and its dependent claims are allowable for at least the following reasons.

Applicants rely on MPEP § 2143, which states that:

> [t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that at least the third criteria of MPEP § 2143 cannot be met in view of the cited references.

The Cited References Do Not Suggest All Claim Recitations

Even if the first requirement of MPEP § 2143 could be satisfied, the cited references still do not meet the third requirement, which is that "the prior art reference (or references when combined) must teach or suggest all the claim limitations."

As seen above, the Hettiarachchi references do not teach each and every element of claim 10. Applicants direct the reader's attention to the above discussion on these references in the interest of economy.

Andersen fails to remedy the deficiencies of Hettiarachchi. Andersen, like Hettiarachchi, does not disclose, teach, or suggest introducing TiO_2 into the feedwater of the

reactor. Like Hettiarachchi, Andersen teaches introducing Ti into the feedwater. Andersen does this because he expects that the Ti will be co-deposited on the reactor component to be protected during re-growth of oxide films on the surface of the reactor component. But again, Ti alone is not a photocatalytic substance, thus a photocatalytic substance is not formed *prior to* introduction into the feedwater. Uetake or Panson do nothing to remedy this deficiency. Thus, claim 10 and its dependent claims are allowable for at least this reason, but there is more.

Andersen, like the Hettiarachchi references, also does not disclose, teach, or suggest the photocatalytic substances formed as particles having "a surface on which at least one of Pt, Rh, Ru and Pd is provided." Andersen teaches that either noble metals and corrosion-inhibiting metals can be used, but the reference is silent in teaching that noble metals are provided on the surface of photocatalytic substances, and Uetake or Panson do nothing to remedy this deficiency. Indeed, the reference is silent in regard to even utilizing a noble metal in conjunction with a corrosion-inhibiting metal, such as Ti. Thus, claim 10 and the claims dependent on claim 10 are allowable in view of Andersen for yet another reason.

In sum, even if the first requirement of MPEP § 2143 is satisfied, the third requirement of MPEP § 2143 cannot be satisfied by the references, since the cited art does not teach each and every element of the claimed invention. Thus, the present claims are allowable.

New Claim 27

As seen above, Applicants have added new claim 27. Like claim 10, claim 27 recites a step that is performed prior to introduction of the corrosion potential reducing substance into the feedwater of the reactor. However, unlike claim 10, the claim recites that either Pt, Rh, Ru and Pd are provided on a Ti particle (a metal which forms a photocatalytic substance) prior to introduction of the particle into the feedwater of the reactor.[2] None of the cited

[2] Support for this new claim is found at page 5, line 31, to page 6, line 7: "A method of securely attaching the corrosion potential reducing substance . . . supplies the corrosion potential reducing substance *into* the cooling water . . . ." (Emphasis added.) That same section provides examples of "corrosion potential reducing substances" at lines 33-34 of page 5: "the photocatalytic *forming* substance combined with a noble metal . . . ." (Emphasis added.) As the specification teaches that Ti is a photocatalytic *forming* substance (see page 5, lines 9-17), claim 27 is supported in the specification.

references teach providing either Pt, Rh, Ru or Pd on a Ti particle prior to introduction into the feedwater of a reactor. Thus, claim 27 is allowable in view of the cited references.

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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